

Claims

I Claim:

1. A sample processing device for liquid sample processing, the device comprising:
a body comprising a top portion, a bottom portion and a reduced-diameter chamber;
a septum disposed on said top portion of said body;
a drip tube portion disposed on said bottom portion of said body, said drip tube portion
5 comprising a bottom opening in fluid communication with said septum;
a conical needle guide disposed between said septum and said reduced-diameter
chamber; and
a processing chamber disposed between said bottom opening and said reduced-diameter
chamber;
10 wherein a diameter of said reduced-diameter chamber and said bottom opening of said
drip tube are less than one half of a diameter of said processing chamber.
2. The sample processing device of claim 1 wherein said diameter of said reduced-
diameter chamber and said bottom opening of said drip tube are less than one fourth of
said diameter of said processing chamber.
3. The sample processing device of claim 1 wherein said diameter of said reduced-
diameter chamber and said bottom opening of said drip tube are less than one eighth of
said diameter of said processing chamber.
4. The sample processing device of claim 1 wherein a length of said reduced-diameter
chamber is greater than four times a diameter of said reduced-diameter chamber to define
an axial alignment portion of said sample processing device with a penetrating sample
deposit/extraction element inserted into the device.
5. The sample processing device of claim 1 wherein a length of said reduced-diameter
chamber is greater than eight times a diameter of said reduced-diameter chamber to

define an axial alignment portion of said sample processing device with a penetrating sample deposit/extraction element inserted into the device.

6. The sample processing device of claim 1 wherein said drip tube portion comprises a drip nozzle having a length of at least two times a diameter of said bottom opening.
7. The sample processing device of claim 1 wherein said drip tube portion comprises a drip nozzle having a length of at least four times a diameter of said bottom opening.
8. The sample processing device of claim 1 wherein said drip tube portion comprises a bottom diameter and said bottom diameter is less than one half of said diameter of said processing chamber.
9. The sample processing device of claim 1 wherein said drip tube portion comprises a bottom diameter and said bottom diameter is less than one fourth of said diameter of said processing chamber.
10. The sample processing device of claim 1 wherein said drip tube portion comprises an end cap engaged to said bottom portion of said body.
11. The sample processing device of claim 10 wherein said end cap comprises a support element for a processing element disposed in said processing chamber.
12. The sample processing device of claim 1 comprising a sample processing element disposed in said sample processing chamber.
13. A sample processing device for testing samples, the device comprising:
a body comprising a top portion, a bottom portion and a reduced-diameter chamber;
a septum disposed on said top portion of said body;
a drip tube portion disposed on said bottom portion of said body and comprising a bottom opening in fluid communication with said septum; and

a processing chamber comprising a diameter greater than a diameter of said reduced-diameter chamber disposed between said drip tube portion and said reduced-diameter chamber;

10 wherein said drip tube portion extends downwardly from said body and converges inwardly from said processing chamber to define a drip tube nozzle of diameter sufficiently small for excessive sample to converge into a single drop on said nozzle.

14. The sample processing device of claim 13 wherein said drip tube nozzle is conical in shape and comprises an end diameter of less than one-eighth inch.

15. The sample processing device of claim 13 wherein said drip tube nozzle is conical in shape, extends at least one quarter inch in length and comprises an end diameter of less than one-eighth inch.

16. The sample processing device of claim 13 comprising a conical guide disposed between said septum and said reduced-diameter chamber.

17. The sample processing device of claim 14 wherein said reduced-diameter chamber comprises a length-to-diameter ratio of greater than 4 whereby said reduced-diameter chamber provides axial alignment of a penetrating sample deposit/extraction element inserted into said reduced-diameter chamber.

18. The sample processing device of claim 14 wherein said reduced-diameter chamber comprises a length-to-diameter ratio of greater than 8 whereby said reduced-diameter chamber provides axial alignment of a penetrating sample deposit/extraction element inserted into said reduced-diameter chamber.

19. A method of testing samples, the method comprising the steps:
inserting a penetrating sample deposit/extraction element into a sample processing device, said sample processing device comprising a top and a bottom defining an axial direction, a septum seal in an upper portion of the device, a reduced-diameter chamber

- 5 communicating with an open bottom end of said device, and a drip tube disposed
between said bottom opening and said reduced-diameter chamber;
transferring sample fluid between said penetrating sample deposit/extraction element and
said device;
physically positioning said sample processing device to another sample processing
10 location by movement of said penetrating sample deposit/extraction element.

20. The method of testing samples of claim 19 comprising the additional steps:
transferring said sample fluid through a processing element disposed in said sample
processing device during said step of transferring sample fluid between said penetrating
sample deposit/extraction element and said device; and
transferring said sample fluid between said penetrating sample deposit/extraction element
and a sample container after said step of physically positioning said sample processing
device to another sample processing location by movement of said penetrating sample
deposit/extraction element.